

भारतीय मानक
धोने योग्य डिसटेम्पर — विशिष्टि
(तीसरा पुनरीक्षण)

Indian Standard
WASHABLE DISTEMPER — SPECIFICATION
(*Third Revision*)

ICS 87.040

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Paints, Varnishes and Related Products Sectional Committee had been approved by the Chemical Division Council.

The washable distemper is largely used for giving decorative finish on the inner surfaces of the building. This standard was first published in 1953 based on the interim coordinated draft drawn up by the co-relating Subcommittee of the No. 5 Standing Committee on Specifications for Paints and Allied Stores of the General Headquarters, India (now Army Headquarters). This was first revised in 1969 wherein the requirements against fastness to light has been suitably modified. This was subsequently revised in 2000. In this revision, the product had been classified into two types, namely oil emulsion and plastic, keeping in mind the availability of such a product in the market. In this version, requirement for 'consistency' was modified and the requirement for 'temperature stability' had been included.

Revision of this Indian Standard has been taken up with a view to incorporate the maximum permissible limit of lead as lead restriction clause in this standard. The technical committee responsible for the formulation of this standard observed that in general some paints like this paint are used for household/decorative applications. Taking cognizance of the fact that lead exposure of human being, particularly children in residential premises is injurious to health and having adverse impact on human health and safety, the Committee felt the need to introduce lead restriction in all paint standards likely to be used for household and decorative purposes.

The Committee observed that due the vary nature of constituents used in formulation of this product, it is not feasible to manufacture this product having lead restriction very low. Therefore, in this revision, lead restriction up to a maximum permissible limit of 300 ppm has been prescribed to avoid hazardous impact of lead exposure in homes and consequent adverse impact on environment and human health. This limit also has been prescribed keeping in view of the scope for exposure to children to the paint once dried. Further, majority of consumers are not aware of the consequences of lead toxicity and its long-term implications to human health. Therefore in this revision, along with lead restriction, a suitable cautionary notice has been included in the marking clause. The 'temperature stability test' has been renamed as 'Accelerated storage stability test'.

This standard is one of the two standards on distemper. The other standard is IS 427 : 2013 'Distemper, dry, colour as required — Specification'.

A scheme for labelling environment friendly products to be known as ECO-Mark is already there at the instance of the Ministry of Environment and Forests (MoEF). The ECO-Mark shall be administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolution No. 71 dated 20 February 1991 published in the Gazette of the Government of India. For a product to be eligible for ECO-Mark it shall also carry Standard Mark of BIS for quality besides meeting additional optional environment friendly (EF) requirements.

The Committee responsible for the formulation of this standard is given in Annex H.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1961 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

WASHABLE DISTEMPER — SPECIFICATION

(*Third Revision*)

1 SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for washable distemper. The material is used as a flat finish for protection and interior decoration on building surfaces where frequent washing may become necessary.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 1303 and the following shall apply.

3.1.1 Ambient Temperature — It is the temperature between 21°C and 38°C.

3.1.2 Volatile Organic Compounds (VOC) — The volatile matter content minus the water content in the distemper.

4 TYPES

4.1 Washable distemper shall be of two types:

Type 1 — Oil emulsion, and

Type 2 — Plastic (synthetic polymer emulsion based)

5 COMPOSITION

The material shall consist of pigments, suitable extenders and preservatives in a medium consisting of any suitable oil emulsion with other ingredients as may be necessary to produce a material so as to comply the requirements of this standard.

6 REQUIREMENTS

6.1 Form and Condition

The material shall be in the form of a homogeneous paste, free from lumps and skins. The material shall

have no odour of purification as such and when mixed with water.

6.2 Thinning

The material when thinned with water, 50 percent by mass of paint, the material shall mix readily with minimum amount of foaming to a smooth and homogenous state.

6.3 Application

The material after recommended thinning shall be suitable for application by brush. The resulting film shall be smooth and uniform.

6.4 Fastness to Light

6.4.1 Panel

Panel used for this test, unless otherwise mentioned, shall be prepared as prescribed in 7 of IS 101 (Part 1/ Sec 3).

6.4.1.1 Asbestos cement (see IS 2096) or gypsum board panel

These panels are for testing in Xenon Arc apparatus and having dimensions, suitable for the apparatus being used for the test but, shall not be smaller than 60 mm × 40 mm.

6.4.1.2 Concrete panels

Of size 150 mm × 150 mm × 12.5 mm.

6.4.2 Test Conditions

The material shall be tested according to the method prescribed in IS 101 (Part 4/Sec 3) in Xenon Arc apparatus with the test conditions as prescribed below:

- a) black panel temperature $63 \pm 3^\circ\text{C}$,
- b) continuous exposure in light, and
- c) time of exposure to light for 250 h.

6.5 Lead Restriction

6.5.1 The material shall be tested for restriction from lead in accordance with IS 101 (Part 8/Sec 5). When thus tested the material shall not contain lead or compounds of lead or mixtures of both, calculated as metallic lead exceeding 300 ppm.

6.6 Keeping Properties

The material shall conform all the requirements as mentioned in 6.1, 6.3 to 6.5 and Table 1 for a minimum period of one year from the date of manufacture when stored in original sealed container at ambient temperature.

6.7 In addition to the above the material shall also comply the requirements as given in Table 1.

6.8 Preparation of Sample for Testing

6.8.1 The sample of the material for testing shall be prepared by mixing with suitable quantity of water/hot water, according to the direction given by the manufacturer for application by brushing, and it shall be kept for 4 h to allow complete dissolution of glue.

6.8.2 Panels used for all tests, unless otherwise mentioned, shall be prepared as specified in 6.8.2.1.

6.8.2.1 Concrete panels of size 150 mm × 150 mm × 12.5 mm, shall be prepared as given in 7 of IS 101 (Part 1/Sec 3).

6.9 Additional Requirement for ECO-Mark

6.9.1 General Requirements

6.9.1.1 The product shall conform to the requirements for quality, safety and performance prescribed under 6.1 to 6.5.

6.9.1.2 The manufacturer shall produce to BIS environmental consent clearance from the concerned State Pollution Control Board as per the provisions of *Water (Prevention and Control of Pollution) Act, 1974* and *Air (Prevention and Control of Pollution) Act, 1981* along with the authorization, if required under the

Environment (Protection) Act, 1986 and rules made thereunder, while applying for ECO-Mark.

6.9.2 Specific Requirements

6.9.2.1 The product shall contain not more than 5 percent, by mass, volatile organic compounds, when tested according to the method prescribed in IS 101 (Part 2/Sec 1) and IS 101 (Part 2/Sec 2).

6.9.2.2 The product shall not contain more than 0.1 percent by mass (as metal), of any toxic metals such as lead, cadmium, chromium (VI) and their compounds when tested by the relevant Atomic Absorption Spectrophotometric methods.

6.9.2.3 The product shall not be manufactured from any carcinogenic ingredients.

NOTE — The Central Drugs Research Institute and Industrial Toxicological Research Centre would furnish a list of carcinogenic ingredients to BIS and would also keep BIS informed about the changes therein.

7 PACKING AND MARKING

7.1 Packing

Unless otherwise agreed to between the purchaser and the supplier, the material shall be packed in suitable metal or plastic containers. The packing is subject to the provisions of the law in force in the country at that time.

7.1.1 The ECO-Marked product shall be packed in such packages which shall be recyclable/reusable or biodegradable. It shall be accompanied with instructions for proper use so as to maximize product performance and minimize wastage.

NOTE — Subsequently the parameters evolved for packaging material packages for ECO-Mark, which are being separately notified/circulated shall also apply.

Table 1 Requirement for Washable Distemper
(Clauses 6.6, 6.7 and 9.1)

Sl No. (1)	Characteristic (2)	Requirement		Method of Test, Ref to	
		Type 1 (3)	Type 2 (4)	Annex (5)	IS 101 (6)
i)	Drying time, <i>Max</i>			B	—
	a) Surface dry	—	30 min		
	b) Hard dry	16 h	4 h		
ii)	Consistency	Smooth and uniform paste suitable for application by brushing after thinning		C	—
iii)	Finish	← Smooth and mat →		—	Part 3/Sec 4
iv)	Colour	Close match to the colour as agreed between purchaser and the supplier		—	Part 4/Sec 2
v)	Fastness to light	Passes the test, if there shall be no appreciable colour change observed when compared to the unexposed panels		—	Part 4/Sec 3
vi)	Residue on sieve, percent by mass, <i>Max</i>	1.0	1.0	D	—
vii)	Recoating properties	← To pass the test →		E	—
viii)	Resistance to alkali	← To pass the test →		F	—
ix)	Accelerated storage stability	← To pass the test →		G	—

7.2 Marking

7.2.1 The container shall be marked as follows:

- a) Name of the material,
- b) Indication of the source of manufacture,
- c) Lead content (maximum),
- d) Volume of the material,
- e) Batch number or lot number in code or otherwise,
- f) Month and year of manufacture,
- g) Colour/Shade of the material, and
- h) A cautionary note as given below:
 - 1) Keep out of reach of children;
 - 2) Dried film of this paint may be harmful, eaten or chewed; and
 - 3) This product may be harmful, swallowed or inhaled.

7.2.2 BIS Certification Marking

The container may also be marked with the Standard Mark.

7.2.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

7.2.3 In case of products certified for ECO-Mark, three major ingredients and hazardous chemicals shall be marked on the container.

7.2.3.1 The criteria for which the product has been labelled as ECO-Mark may also be marked on the container.

7.2.4 Other details of packing and marking shall be in accordance with the instructions given by the purchaser.

8 SAMPLING

8.1 Representative sample of the material shall be drawn as prescribed in IS 101 (Part 1/Sec 1).

8.2 Number of Tests

Test for all characteristics specified shall be conducted on the composite sample.

8.3 Criteria for Conformity

The lot shall be considered as conforming to the requirements of this standard, if the test result of the composite sample satisfy all the requirements specified in the standard.

9 TEST METHODS

9.1 Tests shall be conducted as prescribed in 6.1 to 6.6 and the test methods referred in col 5 and 6 of Table 1.

9.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A (Clause 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
101	Methods of sampling and test for paints varnishes and related products:	(Sec 4) : 1987	Finish (<i>third revision</i>)
(Part 1)	Test on liquid paints (general and physical),	(Part 4)	Optical test on paint films,
(Sec 1) : 1986	Sampling (<i>third revision</i>)	(Sec 2) : 1989	Colour (<i>third revision</i>)
(Sec 3) : 1986	Preparation of panels (<i>third revision</i>)	(Sec 3) : 1988	Light fastness test (<i>third revision</i>)
(Part 2)	Test of liquid paints (chemical examination),	(Part 6/Sec 1) : 1988	Durability tests, Section 1 Resistance to humidity under conditions of condensation (<i>third revision</i>)
(Sec 1) : 1988	Water content (<i>third revision</i>)	(Part 8)	Tests for pigments and other solids,
(Sec 2) : 1986	Volatile matter (<i>third revision</i>)	(Sec 1) : 1989	Residue on sieve (<i>third revision</i>)
(Part 3)	Test of paint film formation,	(Sec 2) : 1990	Pigments and non-volatile matter (<i>third revision</i>)
(Sec 1) : 1986	Drying time (<i>third revision</i>)	(Sec 5) : 1993	Lead restriction test (<i>third revision</i>)

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
109 : 1968	Ready mixed paint, brushing, priming, plaster to Indian Standard Colour No. 361 and 631 white and off-white (<i>first revision</i>)	1303 : 1983	Glossary of terms relating to paints (<i>second revision</i>)
1070 : 1992	Reagent grade water (<i>third revision</i>)	1407 : 1980	Round paint tins (<i>second revision</i>)
		2096 : 1992	Asbestos cement flat sheets (<i>first revision</i>)

ANNEX B

[Table 1, Sl No. (i)]

DETERMINATION OF DRYING TIME

B-0 OUTLINE OF THE METHOD

A concrete panel is evenly coated with the material by brushing and air-dried for a specified time. Another coat is applied at the end of the specified time.

B-1 TEST PANELS AND THEIR PREPARATION

B-1.1 Panels

Unless specified otherwise, concrete panels described under 6.8.2.1 shall be prepared.

B-2 PROCEDURE

B-2.1 Apply by brushing one coat of the material to give a wet film thickness of 50 micron on a concrete

panel as given in **B-1.1** primed with primer (*see* IS 109) and air dry for the time period as specified in Sl No. (i) of Table 1 in a well ventilated room in a horizontal position. During drying protect the film from direct sunlight. Follow other conditions as prescribed in IS 101 (Part 3/Sec 1).

NOTE — Drying time denotes time for hydration and hardening of the paint film and not for evaporation of moisture.

B-3 OBSERVATIONS AND RESULTS

B-3.1 The material shall be deemed to have complied with the requirements of this standard for drying time, if the film becomes surface dry at the end of specified time limit and a second coat of the material can be applied satisfactorily at the end of prescribed time limit.

ANNEX C

[Table 1, Sl No. (ii)]

CONSISTENCY

C-1 APPARATUS

C-1.1 Paint Brush

C-1.2 Preparation for Sample Testing

The sample of the material for testing shall be prepared by thinning with water, 50 percent by mass of paint, and ensure that the material mixes readily with minimum amount of foaming to a smooth and homogenous state.

C-1.3 Panels

Unless specified otherwise, concrete panels described

under 6.8.2.1 shall be prepared.

C-2 PROCEDURE

C-2.1 The sample of the material as prepared in **C-1.2** shall then be applied on the surface of the panel by brushing.

C-2.2 Observations

The coating of the paint sample so applied on the panel shall be smooth and uniform.

ANNEX D

[Table 1, Sl No. (vi)]

DETERMINATION OF RESIDUE ON SIEVE

D-0 GENERAL

D-0.1 Outline of the Method

The material is made into a thin paste with water and passed through a 63 micron IS Sieve.

D-1 APPARATUS

The apparatus shall be as prescribed in 3 of IS 101 (Part 8/Sec 1).

D-2 PROCEDURE

D-2.1 Weigh accurately not less than 50 g of the sample and transfer to a 250 ml beaker. Mix the material to a thin paste with water and keep for 24 h. After this period, thoroughly mix the contents of the beaker and break up all lumps with the flattened end of a stirring rod without grinding action.

D-2.2 Transfer the contents of the beaker to the sieve, using a wash bottle containing water. Remove with a

camel-hair brush any small particles of the material that may be retained on the stirring rod or the sides of the beaker. Wash the residue left on the sieve with water and gently brush with a camel-hair brush until the water passing over the residue and through the sieve is clear and free from solid particles.

D-2.3 When washing is complete, dry the sieve for 1 h at $105 \pm 2^\circ\text{C}$ in an electrically operated oven. Cool and transfer the residue with the help of the brush to a weighed watch glass and determine the weight of the residue.

D-2.4 Calculate the residue on sieve by the equation:

$$R = \frac{100 \times m_1}{m}$$

where

R = residue on sieve, percent by mass;

m = mass, in g, of the sample; and

m_1 = mass, in g, of the residue.

ANNEX E

[Table 1, Sl No. (vii)]

DETERMINATION OF RECOATING PROPERTIES

E-0 OUTLINE OF THE METHOD

The material is converted into brushing consistency and a coat applied on a neat cement block. After allowing to dry for a specified time, a second coat is applied to test the ability of the material to take the second coat.

E-1 PROCEDURE

E-1.1 Mix the material with water to produce material of a suitable consistency for application by brushing. Apply one coat of the mixed material on a clean 150 mm × 100 mm neat cement block of thickness

6 ± 1 mm and allow to air-dry for prescribed time for hard dry as given in Sl No. (i)(b) of Table 1. Apply a second coat at the end of this period.

NOTE — Drying time denotes time for hydration and hardening of the paint film and not for evaporation of moisture.

E-2 OBSERVATIONS AND RESULTS

E-2.1 The requirement of the standard shall be taken as having been satisfied if it is possible to apply the second coat without lifting or working up of the first coat. The paint system shall not exhibit colour separation, sagging, etc.

ANNEX F

[Table 1, Sl No. (viii)]

TEST FOR RESISTANCE TO ALKALI

F-0 GENERAL

F-0.1 Outline of the Method

The material is converted into brushing consistency and applied on a 1 : 1 : 6 portland cement, lime and sand plaster of specified thickness. The coat of the material thus prepared is subjected to a corrosion test for a specified period after which it is tested for any change in colour.

F-1 APPARATUS

F-1.1 Preparation of Substratum (Panel)

F-1.1.1 This consists of a 150 mm × 150 mm × 0.8 mm block of 1 : 1 : 6 cement, lime and sand prepared as described in **F-1.1.1.1**.

F-1.1.1.1 The run lime from slaked quick lime is allowed to mellow for 10 days. The supernatant liquid is then allowed to run off and the top layer of lime putty skimmed and well mixed with a mixture of fine sand (passing 2 mm sieve) and portland cement in the proportion of 1 : 1 : 6 (1 part portland cement, 1 part lime putty and 6 part sand). This mixture is gauged with water (15 percent by mass of the mixture) and block is cast. This is allowed to cure fast at 100 percent relative humidity for 24 h and then for 6 days under

water. The block is air-dried and used within one month. Before application of the material, the block should be soaked in water for 24 h and brought to surface dry condition by exposure to air.

NOTE — On rewetting, the panel surface will regain its alkaline conditions even after a considerable period of storage.

F-1.2 Corrosion Cabinet

As prescribed in 2.1.2 of IS 101 (Part 6/Sec 1).

F-2 PROCEDURE

F-2.1 The material is mixed with water to produce a suitable consistency for application by brushing. The prepared cement block is coated with a uniform normal coat commensurate with satisfactory coverage and appearance of the mixed material. Allow this to air dry in a vertical position for 24 h.

F-2.2 Then suspend this block vertically in the corrosion cabinet as in **F-1.2**. Examine the block daily for a period of 7 days.

F-3 OBSERVATIONS AND RESULTS

F-3.1 The requirement of the standard shall be taken as having been satisfied, if the film of the material shows no change in colour.

ANNEX G

[Table 1, Sl No. (ix)]

TEST FOR ACCELERATED STORAGE STABILITY

G-0 OUTLINE OF THE METHOD

The material is subjected to higher temperature and then tested for thinning and application properties.

G-1 PROCEDURE

G-1.1 Fill clean, dry 500 ml metal container (see IS 1407) with 250 ml of the paint leaving the usual spillage and seal the lid tightly to avoid any leakage. Keep the container at $55 \pm 2^\circ\text{C}$ for 48 h in an

electrically heated oven. Take out the sample container and keep it at room temperature for 24 h thereafter. Subsequently examine the material in the container.

G-2 OBSERVATIONS

The material shall be deemed to have passed this test if it is free from lumps, skins and is capable of thinning suitably for application by brushing on concrete panel.

NOTE — Keep the paint sample in the oven and gradually increase the temperature 55°C .

ANNEX H

(Foreword)

COMMITTEE COMPOSITION

Paints, Varnishes and Related Products Sectional Committee, CHD 20

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IS 428 : 2013

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

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Amendments Issued Since Publication

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